**WHAT IS CLAIMED IS:**

1. A method for generating an output value that is a mathematical function of an input data value, comprising the steps of:

using a Chebyshev minimax approximation technique to determine a polynomial which approximates said mathematical function over a data interval that encompasses said input data value,

storing the coefficients that define said polynomial,

in response to receipt of said input data value, retrieving the stored coefficients; and

evaluating the polynomial with said input data value to generate said output value.

2. The method of claim 1, wherein said mathematical function is approximated in a piecewise manner, with different sets of coefficients being stored in association with respective ranges in said data interval.

3. The method of claim 2, further including the step of determining the range in which an input data value is located, and retrieving the set of coefficients associated with the determined range.

4. The method of claim 1, wherein said mathematical function is a power function.

5. A method for computing a power function in a vector processing architecture, comprising the steps of:

determining polynomials which respectively approximate said power function over contiguous ranges in a data interval,

storing the coefficients that define said polynomials,

in response to receipt of multiple input data values, determining the range in which each data value is located;

retrieving the stored coefficients for each of the determined ranges; and

evaluating the polynomials whose coefficients are retrieved with the associated input data values in a vectorized manner, to generate multiple output values.

6. The method of claim 5, wherein said polynomials are determined by means of a Chebyshev minimax approximation technique.

7. The method of claim 5, wherein said polynomials and ranges are determined such that the maximum error between said output values and the power function is approximately equal for each of said ranges.

8. The method of claim 5 wherein each of said polynomials is of the same order.

9. The method of claim 5 wherein said polynomials are of different respective orders, and further including the step of promoting lower-order polynomials to the highest order of the polynomials associated with the retrieved coefficients prior to said evaluating step.

10. A method for computing a power function in a vector processing architecture, comprising the steps of:

in response to receipt of multiple input data values, retrieving an associated set of coefficients for each input data value which define a polynomial that approximates said power function over a range of data values that encompasses the input data value; and

evaluating the polynomials defined by each retrieved set of coefficients with the associated input data value in a vectorized manner, to generate multiple output values.

11. The method of claim 10 wherein all of said input data values are encompassed within a single range, and the same set of coefficients is associated with each input data value.

12. The method of claim 10 wherein different input data values are encompassed within different respective ranges of data values, and further including the step of determining the range within which each input data value is located.

13. The method of claim 12, wherein said polynomials and ranges are determined such that the maximum error between said output values and the power function is approximately equal for each of said ranges.

14. The method of claim 12 wherein each of said polynomials is of the same order.

15. The method of claim 12 wherein said polynomials are of different respective orders, and further including the step of promoting lower-order polynomials to the highest order of the polynomials associated with the retrieved coefficients prior to said evaluating step.

16. A vector processing system, comprising:

a memory storing a set of coefficients that define a polynomial which approximates a power function over a range of data values; and

a vector processing engine that is responsive to receipt of multiple data input values and a command to apply the power function to those input data values, to retrieve stored coefficients and load them into register locations that respectively correspond to said data input values, and to compute multiple output values from said data input values and the loaded coefficients.

17. The vector processing system of claim 16, wherein said memory stores plural sets of coefficients that are respectively associated with different ranges of data values, and said vector processing engine determines which one of said ranges encompasses each input data value and loads the set of coefficients associated with a determined range into the corresponding register locations for that input data value.

18. A method for processing an image for display in a computer system, comprising the steps of:

receiving an input display value for a pixel of the image in a first color space;

generating a corrected display value in a second color space by evaluating a second-order polynomial that approximates a power function corresponding to the gamma of a display device, in accordance with said input display value;

processing said corrected display value in said second color space to produce a processed display value for said pixel; and

converting said processed display value to said first color space by evaluating a polynomial that is the inverse of said second-order polynomial in accordance with said processed display value.

19. The method of claim 18 wherein said processing comprises combining the corrected display value with another display value in said second color space to generate a blended display value for said pixel.

20. A computer-readable medium containing:

a set of coefficients that define a polynomial which approximates a power function; and

a program that is responsive to receipt of multiple input data values to retrieve said coefficients and evaluate said polynomial relative to each of said data values at the same time to generate multiple output values simultaneously.

21. A computer-readable medium containing:

plural sets of coefficients that define respective polynomials which approximate a power function over corresponding ranges in a piecewise manner; and

a program that is responsive to receipt of multiple input data values to determine which one of said ranges encompasses each of said input data values, retrieve the set of coefficients that corresponds to each determined range, and simultaneously evaluate the polynomials defined by each retrieved set of coefficients with the associated input data values to generate multiple output values at the same time.

22. The computer-readable medium of claim 21, wherein each of said polynomials is of the same order.

23. The computer-readable medium of claim 21, wherein said polynomials are of different respective orders, and wherein said program executes the step of promoting lower-order polynomials to the highest order of the polynomials associated with the retrieved coefficients prior to said evaluating step.